NMC
Nuclear Instrumentation

Date: August 26, 2013

To: U.S. NRC Material License, Region III
2443 Warrenville Rd., Suite 210
Lisle, IL 60532-4352

Reference: License #13-03341-03, Amendment 6

Attn: Mr. William Reihold
Subject: Renewal of License

Dear Mr. Reihold:

Enclosed are the documents for the renewal of the above referenced license.

I have also provided an outline to go along with Appendix C, Items 5 through 11 of NRC Form 313 which I am hoping will assist you in reviewing our request.

Please note as I informed you today Items M through Q on our current license will be picked up by Chase Environmental Group Inc. this Thursday August 29, 2013. I received that telephone call just before you called earlier today. The radium needle will also be dispose of at that time.

Thank you very much for your time and effort on this project. If you need any other information, please do not hesitate to call me.

Very truly yours,

Donald L. DeMoss
President

Nuclear Measurements Corp.

2460 N. Arlington Ave. - P.O. Box 18248
Indianapolis, Indiana 46218-0248
Email: demossd@aol.com

Phone (317) 546-2415
FAX (317) 543-4420
Cell (317) 590-3824

RECEIVED AUG 2 7 2013

NRC FORM 374

U.S. NUCLEAR REGULATORY COMMISSION

Amendment No. 6

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below. 3C03221 576860

Licensee	In accordance with the application dated **January 30, 2012**,
1. Nuclear Measurements Corporation	3. License number 13-03341-03 is amended in its entirety to read as follows:
2. 2460 North Arlington Avenue Indianapolis, IN 46218	4. Expiration date **August 31, 2013**
	5. Docket No. 030-28752 Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cesium-137	A. Sealed sources (Isotope Products, Inc.)	A. 500 microcuries
B. Carbon-14	B. Sealed sources	B. 200 microcuries
C. Chlorine-36	C. Sealed sources	C. 150 microcuries
D. Krypton-85	D Sealed sources	D. 500 microcuries
E. Strontium-90	E. Sealed sources	E 10 microcuries
F. Hydrogen-3	F. Sealed sources	F. 1000 microcuries
G. Barium-133	G. Sealed sources	G. 300 microcuries
H. Cobalt-60	H. Sealed sources	H. 150 microcuries
I. Xenon-133	I. Sealed sources	I. 500 microcuries
J. Uranium-235	J. Sealed sources	J. 0.01 microcurie
K Americium-241	K. Sealed sources	K. 10 microcuries
L. Lead-210	L. Sealed source	L. 0.0043 microcuries
M. Thorium-230	M. Sealed sources	M. 0.119 microcuries
N. Uranium-238	N. Sealed sources	N. 0.010 microcuries
O. Plutonium-239	O. Sealed sources	O. 0.452 microcuries
P. Lead-210	P. Liquid sources	P. 49.835 microcuries
Q. Lead-210	Q. Sealed sources	Q. 0.5577 microcuries

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
13-03341-03

Docket or Reference Number
030-28752

Amendment No. 6

9. Authorized Use

A. To be used for instrument calibration and redistribution to individuals authorized to receive, possess, and use the byproduct material pursuant to a specific license issued by the Nuclear Regulatory Commission or an Agreement State.

B. through K. For instrument calibration and manufacture of instrumentation containing check sources.

L. To be used for instrument calibration.

M. through Q. For storage only incident to disposal.

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at 2460 North Arlington Avenue, Indianapolis, Indiana.

11 The Radiation Safety Officer for this license is Donald L. DeMoss.

12. Licensed material shall be used by, or under the supervision of, Donald L. DeMoss, or Pravin Patel.

13. A. (1) Each sealed source containing licensed material, other than Hydrogen-3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months; except those sealed sources as specified by the manufacturer and specifically authorized by the Commission or an Agreement State may be leak tested at intervals not to exceed three years.

(2) In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

(3) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak test when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.

B. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the appropriate U.S. Nuclear Regulatory Commission, Regional Office referenced in Appendix D of 10 CFR Part 20. The report shall specify the source involved, the test results, and corrective action taken.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
13-03341-03

Docket or Reference Number
030-28752

Amendment No. 6

C. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to perform such services. Licensed material shall not be used in or on humans except as provided otherwise by specific condition of this license.

14. Sealed sources containing licensed material shall not be opened

15. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of byproduct material, manufacturer's name and model numbers, location of sealed sources and the date of the inventory.

16. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

    A. Application dated October 29, 2001,

    B. Facsimile dated January 21, 2002, and

    C. Letters dated January 30, 2012 and February 14, 2012.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date JUL 25 2012

By William P. Reichhold
William P. Reichhold
Materials Licensing Branch
Region III

NRC FORM 313 (03-2013) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 **EXPIRES: 05/31/2015**

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW. *AMENDMENTS/RENEWALS THAT INCREASE THE SCOPE OF THE EXISTING LICENSE TO A NEW OR HIGHER FEE CATEGORY WILL REQUIRE A FEE.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND
ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S.NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [x] C. RENEWAL OF LICENSE NUMBER 13-03341-03

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

NUCLEAR MEASUREMENTS CORPORATION
2460 N. ARLINGTON AVE.
INDIANAPOLIS, IN 42618

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

NUCLEAR MEASUREMENTS CORPORATION
2460 N. ARLINGTON AVE.
INDIANAPOLIS, IN 42618

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

DONALD L. DEMOSS

BUSINESS TELEPHONE NUMBER	BUSINESS CELLULAR TELEPHONE NUMBER
(317) 546-2415	(317) 590-3824

BUSINESS EMAIL ADDRESS

demossd@aol.com

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
   a. Element and mass number; b. chemical and/or physical form; and c. maiximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*) *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY _____ AMOUNT ENCLOSED $ _____

13. CERTIFICATION. *(Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.*

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35 , 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.
WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A C RIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
DONALD L. DEMOSS / PRESIDENT	Donald L. DeMoss	08/23/13

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

Appendix C

Suggested Format for Providing Information Requested in Items 5 through 11 of NRC Form 313

Suggested Format for Providing Information Requested in Items 5 through 11 of NRC Form 313

Appendix C is designed to be used for all types of applicants requesting a service license. Because of the varied types of service applications it is necessary to make this appendix sufficiently broad in scope to handle most applications. Services such as commercial nuclear laundries and waste management applicants may need to provide additional information once the necessary pre-licensing visit(s) are completed. Maintaining close coordination during the early licensing phase with the NRC licensing staff can be beneficial to both the NRC staff and applicant.

Using this appendix successfully requires the applicant to do an initial review of the NUREG and preplan its answers. We suggest that applicants read the entire appendix from beginning to end. The next step is to select the individual elements that apply to the individual types of service(s) requested. Highlight or circle Item Nos, or in some other way identify the areas that require specific information. Provide the information on the specific elements that you identified as requiring input for obtaining authorization for the requested services.

After selecting the applicable items that need to be addressed in Appendix C, refer to the corresponding sections in the NUREG. It is only necessary for applicants to provide the level of detail required for the individual types of service(s) requested in the application. Note that providing information for very limited licenses, e.g., leak test service provider, requires less information than would be required for a commercial nuclear laundry or a waste management license. Applicants for service licenses requiring authorization for types and quantities of material specific for broad scope licenses should refer to NUREG-1556, Vol. 11, "Consolidated Guidance About Material Licenses: Program-Specific Guidance About Licenses of Broad Scope," and NUREG-1556, Vol. 7, "Consolidated Guidance About Material Licenses: Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope."

Item No.	Title and Criteria	Use Table(s) Below	Description Attached
5	**RADIOACTIVE MATERIAL**		
	Sealed Sources and Devices See License #13-03341-03, Amendment #06 and Attachments and Cover Letter		
	• Identify each radionuclide that will be used in each sealed source/device.	❒	❒
	• Identify the manufacturer or distributor and model number of each sealed source/device.	❒	❒
	• Confirm that each sealed source/device combination is listed and approved in the SSD registry for the purpose intended.	❒	❒
	• Confirm that the activity per source/maximum activity per device specified in the SSD registration certificate will not be exceeded.	❒	❒

Sealed Sources

Radioisotope	Manufacturer/ Model No.	Quantity	Yes	No
Unsealed Material N/A		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet	❒	❒
		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet	❒	❒
		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet	❒	❒

Source Material

❒ Depleted Uranium	_____ Kilograms	
❒ Uranium-238	_____ Kilograms	N/A
❒ Thorium-232	_____ Kilograms	See attached cover letter
❒ Other: Specify	_____ Kilograms	

Special Nuclear Material

Radioisotope	Manufacturer/ Model No.	Quantity	Yes	No
❒ Uranium-234 ❒ Uranium-235 ❒ Plutonium-238 ❒ Plutonium-239 ❒ Other: Specify		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet N/A See attached cover letter	❒	❒

Unsealed or Uncontained Materials

Identify each individual isotope requested:

Radioisotope	Chemical or Physical Form				Total Activity Requested
Lead-210	☐ Gas	☒ Liquid	☐ Solid	☐ Other: Specify	49.77 microcuries(To be dispose of in 2013 and stored until incident to disposal, See Attachement)
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	

OR

N/A

Identify your request for Type B or Type C quantities of material by filling out the table below:

Radioisotope	Yes	No
• Any radioisotope identified in 10 CFR 33.100, Schedule A, Column I — (Type B License of Broad Scope)	☐	☐
OR		
• Any radioisotope identified in 10 CFR 33.100, Schedule A, Column II — (Type C License of Broad Scope)	☐	☐

AND IF APPLICABLE

Identify *individual isotopes* identified in 10 CFR 33.100 Schedule A, Column I or II, that requested quantities exceeding amounts authorized in Column I or II.

Radioisotope	Chemical or Physical Form				Total Activity Requested
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	
	☐ Gas	☐ Liquid	☐ Solid	☐ Other: Specify	

AND

Identify any uncontained source or special nuclear materials that should be included in the license:

Source Material			
❒ Depleted Uranium	_____	Kilograms	
❒ Uranium-238	_____	Grams	N/A
❒ Thorium-232	_____	Grams	
❒ Other:	_____	Grams	
Special Nuclear Material Less than Critical Mass Quantities			
❒ Uranium-234	_____	Grams	
❒ Uranium-235	_____	Grams	N/A
❒ Plutonium-238	_____	Grams	
❒ Plutonium-239	_____	Grams	

For those individuals who will provide commercial services on sealed sources/devices and will be required to *take possession of materials incident to providing services*:

Sealed Sources/Devices Possessed Incident to Providing Services				
Radioisotope	**Manufacturer/ Model No.**	**Quantity**	**Yes**	**No**
N/A		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet	❒	❒
		Not to exceed the maximum activity per source/device as specified in the Sealed Source and Device Registration Sheet	❒	❒

Source Material			
❒ Uranium-238	_____	Kilograms	
❒ Thorium-232	_____	Grams	N/A
❒ Other:	_____	Grams	
❒ Depleted Uranium	_____	Kilograms	

Special Nuclear Material Less than Critical Mass Quantities			
❒ Uranium-234	_____	Grams	
❒ Uranium-235	_____	Grams	N/A
❒ Plutonium-238	_____	Grams	
❒ Plutonium-239	_____	Grams	

For those individuals who will provide commercial services involving unsealed or uncontained material and will be required to take possession of these materials incident to providing services:

Unsealed or Uncontained Materials

Identify each individual isotope requested: N/A

Radioisotope	Chemical or Physical Form				Total Activity Requested
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	

OR

Identify your request for Type B or Type C quantities of materials by filling out the table below:

Radioisotope	Yes	No
• Any radioisotope identified in 10 CFR 33.100, Schedule A, Column I — (Type B License of Broad Scope)	❒	❒
OR		
• Any radioisotope identified in 10 CFR 33.100, Schedule A, Column II — (Type C License of Broad Scope)	❒	❒

AND IF APPLICABLE

Identify *individual isotopes* identified in 10 CFR 33.100 Schedule A, Column I or II, that requested quantities exceeding amounts authorized in Column I or II.

Radioisotope	Chemical or Physical Form				Total Activity Requested
N/A	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	
	❒ Gas	❒ Liquid	❒ Solid	❒ Other: Specify	

AND

Identify any uncontained source or special nuclear materials that should be included in the license:

Source Material			
❒ Depleted Uranium	_____	Kilograms	
❒ Uranium-238	_____	Grams	N/A
❒ Thorium-232	_____	Grams	
❒ Other:	_____	Grams	
Special Nuclear Material			
❒ Uranium-234	_____	Grams	
❒ Uranium-235	_____	Grams	N/A
❒ Plutonium-238	_____	Grams	
❒ Plutonium-239	_____	Grams	

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
5	**RADIOACTIVE MATERIAL**				
	Financial Assurance and Recordkeeping For Decommissioning				
	• Pursuant to 10 CFR 30.35(g), we shall maintain drawings and records important to decommissioning and transfer these records to a new licensee before licensed activities are transferred, or assign the records to the appropriate NRC Regional Office before the license is terminated.	☑	☐		See attachment RP-101, Rev 1, Radioactive Source Inventory and Control
	OR				
	• If financial assurance is required, submit evidence.				☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
6	**PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED**				See Attachment Appendix C Brief Outline
	• Leak Test Analysis	☐	☐		
	• Environmental Sample Analysis	☐	☐		
	• Instrument/Dosimeter Calibration	☑	☐		✓
	• Instruction	☐	☐		
	Possession Incident to Performing the Following Services on Sealed Sources and Devices			☑	
	• Installation	☐	☐		☐
	• Radiation Surveys	☐	☐		☐
	• Removal	☐	☐		☐
	• Disposal	☐	☐		☐
	• Relocation	☐	☐		☐
	• Repair	☐	☐		☐
	• Source Exchange	☐	☐		☐
	• Routine Maintenance	☐	☐		☐
	• Non-routine Maintenance	☐	☐		☐
	• Source Retrieval	☐	☐		☐
	• Transportation	☐	☐		☐
	• Packaging	☐	☐		☐
	• Leak Test Sample Acquisition	☐	☐		☐
	• Customer Training	☐	☐		☐
	• Other Services not identified above, excluding activities involving critical mass quantities of special nuclear material: Specify.	☐	☐		☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
6	**PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED *(Cont'd.)***				
	Possession Incident to Performing Commercial Services Utilizing Unsealed or Uncontained Licensed Material:			☑	
	Nuclear Laundry	☐	☐		
	Waste Management Services:				
	• Commercial Incineration	☐	☐		
	• Commercial Compaction/Super Compaction	☐	☐		
	• Commercial Solidification/Vitrification	☐	☐		
	• Packaging, Repackaging, and Transportation of Radioactive Waste	☐	☐		
	• Decontamination	☐	☐		
	• Decommissioning	☐	☐		
	• Site Characterization	☐	☐		
	• Radiation protection or health physics training and instruction	☐	☐		
	• Other Services not identified above, excluding activities involving critical mass quantities of special nuclear material: Specify.				☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
7	**INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE** **Radiation Safety Officer** • The name of the proposed RSO: **AND EITHER** • The specific training and experience of the RSO; **OR** • Alternative information demonstrating that the proposed RSO is qualified by training and experience, e.g., listed by name as an authorized user or the RSO on an NRC or Agreement State license that requires a radiation safety program of comparable size and scope.				Remains the same as License #13-03341-03, Amendment #06 Donald DeMoss See Attachment ☑ See Appendix C Brief Outline ☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
8	**TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS**				
	Authorized Users				
	• "Before using licensed material, authorized users will receive the training described in Appendix H of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐		Remains the same as License #13-03341-03, Amendment #06
	OR				See Attachment RP-100, Rev 1
	• A description of the training and experience for proposed authorized users.				☑
	Ancillary Personnel				
	• "Before using licensed materials, ancillary personnel will have successfully completed the classroom training portion of the training course described in Appendix H of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐		Remains the same as License #13-03341-03, Amendment #06
	OR				
	• A description of the radiation safety training program, including topics covered, groups of workers, assessment of training, qualifications of instructors, and the method and frequency of training.				☑ See Attachment Appendix C Brief Outline

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
9	**FACILITIES AND EQUIPMENT** **Permanent Facilities Specifically Identified on the License**	Remains the same as License #13-03341-03, Amendment #05			
	• Leak Test and Environmental Sample Analysis Providers: No response required for facilities. (Equipment is discussed in Item 10, Radiation Safety Program.)	No Response is Necessary for this Section			
	• Instrument Calibration: If only sealed sources are possessed in registered devices designed to emit a collimated beam for the purpose of instrument calibration, no response required. (Equipment is discussed in Item 10, Radiation Safety Program.)	No Response is Necessary for this Section			
	• Services that involve handling of sealed sources in a shielded container: No response required. (Equipment is discussed in Item 10, Radiation Safety Program.)	No Response is Necessary for this Section			
	• Services that involve handling of sealed sources outside a shielded container: – Submit a drawing or sketch of the proposed permanent facility identifying areas where radioactive materials, including radioactive wastes, will be used or stored. – Show in the drawings the relationship and distance between restricted areas and adjacent unrestricted areas. – Specify in the drawings shielding materials (concrete, lead, etc.) and means for securing radioactive materials from unauthorized removal. – Drawings, sketches, diagrams, etc. should indicate the scale or include dimensions on each drawing or sketch. – Describe engineered safety systems, e.g., area monitors, interlocks, alarms, etc.	☐	☐		☑ See Attached Drawing ☐ Rad Source Storage Area ☐ ☐ ☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
9	**FACILITIES AND EQUIPMENT** ***(Cont'd.)***				
	Permanent Facilities Specifically Identified on the License Requesting the Use of Unsealed or Uncontained Material				
	• Leak Test and Environmental Sample Analysis Providers: No response required for facilities. (Equipment is discussed in Item 10, Radiation Safety Program.)	No Response is Necessary for this Section			
	• Other services that involve handling of unsealed radioactive material at permanent facilities or field stations identified on the license:	❒	❒		
	– Describe the permanent facilities and equipment to be made available at each location where unsealed radioactive material will be used or handled.			❒	❒
	– Include a description of the area(s) assigned for the receipt, storage, security, preparation, handling, waste storage and measurement of radioactive materials.			❒	❒
	– Submit a facility diagram showing the proximity of licensed materials to unrestricted areas.	❒	❒	❒	❒
	– Drawings, sketches, diagrams, etc. should indicate the scale, or include dimensions on each drawing or sketch.			❒	
	– Submit a diagram, sketch, or drawing, when applicable, that identifies areas where radioactive materials may become airborne. The diagram should contain descriptions of the ventilation systems, with pertinent airflow rates, filtration equipment, sample collection points, and monitoring systems.			❒	❒
	– Submit a diagram of radioactive waste handling equipment that includes incinerators, compactors, solidification equipment, hold-up tanks, sample collection points, etc.			❒	❒

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
9	**FACILITIES AND EQUIPMENT** ***(Cont'd.)***				
	Permanent Facilities Specifically Identified on the License Requesting the Use of Unsealed or Uncontained Material ***(Cont'd.)***				
	– Describe proposed laundry facilities, if applicable, used for contaminated protective equipment and clothing. Specify how the contaminated waste water from the laundry machines or sinks is disposed. Operating and emergency procedures should address decontamination of the laundry area and equipment.			☐	☐
	– Describe protective clothing (such as rubber gloves, coveralls, respirators, and face shields), auxiliary shielding, absorbent materials, secondary containers for waste water storage for decontamination purposes, plastic bags for storing contaminated items, etc., that will be available.			☐	☐
	– Identify specialized handling tools, facility interlocks designed to prevent operation of systems in the event that operation of the system could result in accidental exposure or release of material (e.g., HEPA filters, ventilation system, etc.) or equipment.			☐	☐
	Temporary Job Site Locations				
	• No facility description is required for use of materials at temporary job sites.	Need Not Be Submitted With Application			

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** The applicant is required to establish and submit its radiation protection program. Each item listed below should be addressed in the corresponding sections of this guide.			NMC's Radiation Safety Program RP Series Remains the same as License #13-08341-03, Amendment #06	
	• Development and implementation of an ALARA program.	☑	☐	☐	☑
	• Description of equipment and facilities adequate to protect personnel, the public and the environment.	☑	☐	☐	☑
	• Confirmation that licensed activities are conducted only by individuals qualified by training and experience.	☑	☐	☐	☑
	• Development and maintenance of written operating and emergency procedures.	☑	☐	☐	☑
	• Implementation of an audit program to ensure that, at least annually, the radiation safety program is reviewed.	☑	☐	☐	☑
	• Description of organization structure and individuals responsible for ensuring day-to-day oversight of the radiation safety program.	☑	☐	☐	☑
	• Establishment and management of a radiation safety and decommissioning records system.	☑	☐	☐	☑
	• Methods or procedures for preventing the release of contaminated material and equipment.	☑	☐	☐	☑
	• Methods or procedures for preventing personnel contamination. Radiation safety procedures and the authorized users responsibilities unique to each type of service operation requested in the application.	☑	☐	☐	☑
	• Radiation safety procedures.	☑	☐	☐	☑
	• Equipment, techniques, and corresponding radiation safety procedures associated with providing services involving either sealed sources or unsealed materials.	☑	☐	☐	☑
	Audit Program	Need Not Be Submitted With Application			

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Radiation Monitoring Instruments				
	• A description of the instrumentation described in Section 8.10.2 of NUREG-1556, Vol. 18, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses," dated November 2000, that will be used to perform required surveys. "We will use instruments that meet the radiation monitoring instrument specifications published in Appendix J of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000.' We reserve the right to upgrade our survey instruments as necessary."	❒	❒		❒
	OR				
	• A description of the instrumentation described in Section 8.10.2 of NUREG-1556, Vol. 18, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses," dated November 2000, that will be used to perform required surveys. "We will use instruments that meet the radiation monitoring instrument specifications published in Appendix J of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000. Additionally, we will implement the model survey meter calibration program published in Appendix J of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000. We reserve the right to upgrade our survey instruments as necessary."				☑ See Attachment

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Radiation Monitoring Instruments ***(Cont'd.)***				
	OR				
	• A description of alternative equipment and/or procedures for ensuring that appropriate radiation monitoring equipment will be used during licensed activities and that proper calibration and calibration frequency of survey equipment will be performed. The statement, "We reserve the right to upgrade our survey instruments as necessary," should be added to the response.				☑
	Material Receipt and Accountability				
	• "Ordering licensed material and package receipt and opening will follow the model procedures in Appendix K of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☑	☐		See RP-104, Rev 1
	OR				
	• Submit a description of procedure(s) for ordering licensed material and package receipt and opening.				☐
	AND				
	• For unsealed licensed material, submit a description of procedure(s) for ensuring material accountability.				☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Occupational Dosimetry				
	• "We will have a prospective evaluation and determine that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10 CFR Part 20, or we will monitor individuals in accordance with the criteria in the section entitled 'Occupational Dose' in NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☑	☐		
	OR				
	• A description of an alternate method for demonstrating compliance with the referenced regulations.				☐
	AND/OR				
	• Provide a bioassay program when using unsealed radioactive materials. If an applicant elects to provide a bioassay program that is less conservative than recommended in Regulatory Guide 8.20, its rationale should be stated.				☐
	AND				
	• Bioassay programs must include what the applicant considers and acceptable interval or schedule for conducting bioassays, identify action levels or guidelines, and describe specific actions to be taken when action levels are exceeded. Because of the complex nature of bioassay and corresponding data analysis, it is acceptable for applicants to make reference to the procedures in NRC guidance documents.				☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Occupational Dosimetry ***(Cont'd.)***				
	OR				
	• Contract with an outside group for bioassay services. Provide a commitment that each vendor is licensed or otherwise authorized by NRC or Agreement State to provide required bioassay services.				☐
	Public Dose	Need Not Be Submitted With Application			
	The applicant is not required to, and should not, submit a response to the public dose section during the licensing phase. This matter will be addressed during an inspection.				
	Operating and Emergency Procedures				
	• Procedure for obtaining an agreement with customers outlining the responsibilities of both the customer and service provider, when performing service operations at a customer's facility	☐	☐	☑	☐
	• Instructions for handling and using licensed materials.	☑	☐	☐	☑
	• Instructions for maintaining security during storage and transportation.	☑	☐	☐	☑
	• Instructions to keep licensed material under control and immediate surveillance during use.	☑	☐	☐	☑
	• Steps to take to keep radiation exposures ALARA.	☑	☐	☐	☑
	• Steps to maintain accountability during use.	☑	☐	☐	☑
	• Steps to control access to work sites.	☑	☐	☐	☑
	• Steps to take and whom to contact when an emergency occurs.	☑	☐	☐	☑
	• Instructions for using remote handling tools when handling sealed sources, except low-activity calibration sources.	☐	☐	☑	☐
	• Methods and occasions for conducting radiation surveys, including surveys for detecting contamination.	☑	☐	☐	☑

See NMC's Radiation Protection Safety Program RP Series Beginning with RP-100, Rev1

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Operating and Emergency Procedures ***(Cont'd.)***				
	• Procedures to minimize personnel exposure during routine use and in the event of an incident, including exposures from inhalation and ingestion of licensed unsealed materials.	☐	☐	☑	☐
	• Methods and occasions for locking and securing stored licensed materials.	☑	☐	☐	☑
	• Procedures for the implementation and adherence to good health physics practices while performing service operations:				See Attachment RP-101, Rev 1 and NMC RP Series
	– Minimization of distance to areas, to the extent practicable, where licensed materials are used and stored	☐	☐	☑	☐
	– Maximization of survey frequency, within reason, to enhance detection of contamination	☐	☐	☑	☐
	– Segregation of radioactive material in waste storage areas	☐	☐	☑	☐
	– Segregation of sealed sources and tracer materials to prevent cross-contamination	☐	☐	☑	☐
	– Separation of radioactive material from explosives	☐	☐	☑	☐
	– Separation of potentially contaminated areas from clean areas by barriers or other controls.	☐	☐	☑	☐
	• Personnel monitoring, including bioassays, and the use of personnel monitoring equipment.	☐	☐	☑	☐
	• Transportation of licensed materials to temporary job sites, packaging of licensed materials for transport in vehicles, placarding of vehicles when needed, and physically securing licensed materials in transport vehicles during transportation to prevent accidental loss, tampering, or unauthorized removal.	☐	☐	☑	☐
	• Procedures for picking up, receiving, and opening packages containing licensed materials, in accordance with 10 CFR 20.1906.	☐	☐	☑	☐
	• Instructions for maintaining records in accordance with the regulations and the license conditions.	☐	☐	☑	☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Operating and Emergency Procedures ***(Cont'd.)***				
	• Procedures for identifying and reporting to NRC defects and noncompliance as required by 10 CFR 21.21(a) of this chapter.	☑	☐	☐	☑
	• Procedures and actions to be taken if a sealed source is ruptured, including actions to prevent the spread of contamination and minimize inhalation and ingestion of licensed materials and actions to obtain suitable radiation survey instruments.	☑	☐	☐	☑
	• Instructions for the proper storage and disposal of radioactive waste.	☑	☐	☐	☑
	• Procedures to be followed in the event of uncontrolled release of radioactive unsealed licensed material to the environment, including notification of the RSO, NRC, and other Federal and state agencies.	☑	☐	☐	☑
	• Procedures for identifying and reporting to NRC defects and noncompliance. See Table 8.4, which describes the typical incident notifications required by NRC regulations.	☑	☐	☐	☑

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Surveys				
	• "We will survey our facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☑	☐		
	OR				
	• Submit description of alternative method for demonstrating how to evaluate a radiological hazard.				☐
	Leak Tests				
	• "Leak tests, when required by the license, will be performed at intervals approved by NRC or an Agreement State and specified in the Sealed Source and Device Registration Sheet. Leak tests will be performed by an organization authorized by NRC or an Agreement State to provide leak testing services to other licensees or using a leak test kit supplied by an organization authorized by NRC or an Agreement State to provide leak test kits to other licensees and according to the kit supplier's instructions."	☐	☐	☐	
	OR				
	• "Leak testing will follow the model procedures in Appendix O of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐		

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Leak Tests ***(Cont'd.)***				
	OR				
	• "Leak testing procedures and analysis will be done by the applicant." Provide the information in supporting a request to perform leak testing. Appendix O of NUREG-1556, Vol. 18, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses," dated November 2000, may serve as guidance.	☑	☐	☐	☑ See RP-105, Rev. 1
	OR				
	• "We will provide commercial leak test kits as described in the model leak test kit description in Section 8.9.8 of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐	☐	
	AND				
	• "We will provide leak test kits as described in the model leak test kit description in Section 8.9.8 of NUREG-1556, Vol. 18."	☐	☐	☐	
	• Provided is a sample of the leak test kits that will be distributed commercially for each type of sealed source/device combination we plan to provide.				☐

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Maintenance			✓	
	• "We will implement and maintain procedures for conducting routine maintenance of our device according to each manufacturer's (or distributor's) written recommendations and instructions."	❒	❒		❒
	OR				
	• Alternative procedures are provided for NRC's review. • "We will have the device manufacturer (or distributor) or other person authorized by NRC or an Agreement State to perform non-routine maintenance on our devices."	❒	❒		❒
	OR				
	• Information requested in Appendix P of NUREG-1556, Vol. 18, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses," dated November 2000, is provided to support requests to conduct non-routine maintenance procedures.				❒
	Minimization of Contamination	No Response is Necessary for this Section			
	• NRC will consider that the criteria for minimization of contamination has been met if the applicant's responses satisfy the criteria in the following sections: "Radioactive Material – Unsealed and/or Sealed Sources," "Facilities and Equipment," "Radiation Safety Program – Safe Use of Radioisotopes and Emergency Procedures," "Radiation Safety Program – Surveys," and "Radiation Safety Program – Waste Management."				

Item No.	Title and Criteria	Yes	No	N/A	Description Attached
10	**RADIATION SAFETY PROGRAM** ***(Cont'd.)***				
	Transportation No response is needed from applicants during the licensing phase.	No Response is Necessary for this Section			
	Waste Management				
	• "We will use the model waste procedures published in Appendix N of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐	☑	
	• If the applicant wishes to use only selected model procedures, provide a statement that: "We will use the (specify either: (1) Decay-In-Storage; or (2) Disposal of Liquids Into Sanitary Sewerage) model waste procedures that are published in Appendix N of NUREG-1556, Vol. 18, 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Service Provider Licenses,' dated November 2000."	☐	☐	☑	
	OR				
	• Provided are procedures for waste collection, storage, and disposal by any of the authorized methods described in this section.				☐
	OR				
	• If access to a radioactive waste burial site is unavailable, the applicant should request authorization for extended interim storage of waste. Applicant should refer to NRC IN 90-09, "Extended Interim Storage of Low-Level Radioactive Waste by Fuel Cycle and Materials Licensees," dated February 1990, for guidance if extended storage is required.	☐	☐	☑	☐

NMC
Nuclear Instrumentation

Appendix C Brief Outline

Item 5, Pages C-1 through C-7:

We are disposing of M through Q on Thursday, August 29, 2013 on License #13-03341-03, Amendment 6, consequently, many of those sections in Item 5 do not apply to NMC.

Item 6, Pages C-8 and C-9:

NMC is a manufacturer of radiation monitor instrument for the commercial nuclear power industry, government laboratories, and universities and private facilities requiring monitoring solutions for radioactivity. We use radioactive sources to calibrate air, liquid and area monitors in addition to some laboratory instruments that incorporate gas flow proportional detectors.

Item 7, Page C-10:

NMC has been in business since 1948 and I, Donald L. DeMoss the RSO have been with the company for 40 years.

I have a BA and a MA in physic and have worked with radioactive material since the academic time of my life up until the present. I have assisted many of our users from all over the world with their calibration needs.

Item 8, Pages C-11 and C 12:

See attachment RP-100, Rev 1.

Additionally, we will be ordering some training videos this year for NMC employees.

Item 9, Pages C12 through C14:

After Thursday, August 26, 2013 NMC will only have sealed sources on site.

Item 10, Pages C15 through C25:

NMC's Radiation Safety Program Procedures addresses the line items in this section.

CHASE
Environmental Group INC.

Waste Management and Remediation Services

8/13/13

Nuclear Measurements Corp.
2460 North Arlington Ave.
Indianapolis, IN 46218

Source Removal, Packaging, and Transportation

To Whom It May Concern:

Nuclear Measurements Corporation (NMC) in Indianapolis, Indiana, through the issuance of a purchase order, has contracted Chase Environmental group, Inc. (Chase) to prepare, package, and transport an inventory of unwanted sources, including an inventory of Ra-226 materials, as well as several 1" disc sources. Chase will send a trained technician to the NMC site to prepare and transport the respective materials. On-site radiological activities will be performed under Chase's Commonwealth of Kentucky Radioactive Material License No. 201-605-90, utilizing reciprocal agreement with the Nuclear Regulatory Commission.

Chase will schedule the source packaging and transportion efforts in accordance with a milk-run service on or before September 30th, 2013. If you have any questions concerning this scope of work, please feel free to contact us at (877) 389-2124.

Sincerely,
Chase Environmental Group, Inc.

John R. O'Neil
Director - Radiological Services

pc:
File

NMC
Nuclear Instrumentation

Nuclear Measurements Corporation

Radiation Safety Program

HANDLING RADIOACTIVE MATERIAL

Written by: Donald R. DeMoss

Nuclear Measurements Corp.

2460 N. Arlington Ave. – P.O. Box 18248 Phone (317) 546-2415 Fax (317) 543-4420

Indianapolis, Indiana 46218 Email: demossd@aol.com

A. PURPOSE:

The purpose of this procedure is to provide guidance for the safe handling of radioactive material at Nuclear Measurements Corporation (NMC).

B. References:

1. NRC Materials License 13-03341-03, Amendment No. 6
2. 10 CFR 20

C. General:

1. NMC procedures RP-100 through 108 outline the requirements of NMC's Radiation safety program. The RP-series procedures are structured to the limited use of radioactive material at the NMC Indianapolis facility. It is each individual's responsibility to adhere to this procedure and to all other procedures associated with maintaining ALARA exposure to radioactive material.
2. The Radiation Safety Officer (RSO) is responsible for the control and use of radioactive material at NMC.
3. The RSO is responsible for insuring that employees receive annual documented training concerning the proper handling of radioactive material. Training will consist of the review of all current NMC radiation procedures and will be documented on the Training Documentation Form. All records will be maintained by the RSO.
4. Any work with any sources must be approved by the RSO before implementation.

D. Procedure:

1. In all cases , radioactive material shall be handled in a manner that minimizes personnel exposure:
    a. Time; Minimize the duration of the exposure time to any radioactive source.
    b. Distance; Maintain as great a distance as practical from any radioactive source.
    c. Shielding; Make prudent use of the provided shielding containers (where applicable) enclosing the radioactive source; remove the source only when absolutely necessary.

2. Self-Reading Dosimeters:
   A self-reading dosimeter is required for all individuals handling quantities of radioactive . material in excess of the limits specified in 10 CFR 20, Appendix C. All self-reading dosimeters are to be obtained from the RSO before performing any task involving radioactive material and then returned to the RSO. The Self-Reading dosimeter Log must be completed by that person. The log will be maintained by the RSO.
   Note: All dosimeters must be in current calibration.
3. Liquid Sources
   a. Use protective rubber gloves when handling sources.
   b. A survey meter should be used for monitor the area of use and any personnel involved.
   c. If a spill should occur take immediate action to minimize further contamination by containing the spill. Use paper towels, ""oilsorb" and etc and immediately contact the RSO.
4. Decontamination:
   a. All decontamination is to be performed under the direction of the RSO.
   b. Personnel decontamination will normally be accomplished by washing the affected area with soap and water. A survey will be performed by the by the RSO after each decontamination to verify that all radioactivity has been washed away. The utility sink between the rest rooms will be used for all decontamination work. A complete survey must be performed after each decontamination and that survey documented.
   c. Area decontamination (counter tops or floors) will normally be accomplished by scrubbing the affected area with a detergent or bleach solution. A survey will be performed by the RSO after decontamination work is completed to verify that all radioactivity has been cleaned-up.
   d. All materials used for decontamination work must either be cleaned and verified by a survey or disposed of by the RSO.

   Note: All personnel and area contamination incidents shall be completely documented by the RSO.

SELF-READING DOSIMETER LOG

Dosimeter Serial #	Name	Initial Reading	Final Reading	Net Reading	Date	RSO Initials

RADIATION PROTECTION TRAINING DOCUMENTATION FORM

I have reviewed and I understand the NMC Radiation Protection Program and I acknowledge that it is my responsibility to strictly adhere to all of its provisions.

Employee Signature	Date

RP-101, Rev 1

Nuclear Measurements Corporation

Radiation Safety Program

RADIOACTIVE SOURCE INVENTORY AND CONTROL

Written by: Donald L. DeMoss

Nuclear Measurements Corp.

2460 N. Arlington Ave. – P.O. Box 18248 Phone (317) 546-2415 Fax (317) 543-4420

Indianapolis, Indiana 46218 Email: demossd@aol.com

A. PURPOSE:

The purpose of this procedure is to establish the methods for maintaining adequate inventory control of radioactive material at Nuclear Measurements Corporation (NMC).

B. References:

1. NRC Materials License 13-03341-03, Amendment No. 6
2. 10 CFR 20

C. General:

1. The Radiation safety Officer (RSO) is responsible for the control of all licensed radioactive material at Nuclear Measurements Corporation.
2. All radioactive sources must be accounted for on the Radioactive Source Inventory Log. This includes any new sources received or disposed of.
3. The radioactive source Inventory Log must be maintained accurately at all times by the RSO. The log serves as the official tracking document for all sources and will be used to prepare annual NRC reports.

D. Procedure:

1. Radioactive Source Inventory
    a. The radioactive source inventory is to be completed every six months by the RSO.
    b. Obtain the last completed Radioactive Source Inventory Log to use as guide for completing the next semiannual inventory. A new inventory log should be completed for semiannual inventory.
    c. Locate each source and verify that the information on the log is correct. Record any corrections or updates.
    d. Upon completion of the source inventory, total the activity for each isotope and record on the summary page of the inventory log.
2. Radioactive Source Control and Storage
    a. All sources should be stored in their designated storage location when not in use.
    b. Each container of licensed material shall be labeled as radiation material and should specify the isotope, activity and date.
    c. A "Caution Radioactive Materials" sign will be posted when sources are in use and out of storage.

3. Radioactive Material Purchasing
    a. The RSO will be responsible for the purchases of all radioactive sources.
    b. All requisitions for radioactive material must be reviewed by the RSO.
    c. The current radioactive source inventory will be checked against NMC's NRC License 13-03341-03, Amendment 06 to verify that the current request does not violate the license.
    d. A copy of each completed Purchase Order for radioactive material will be routed to the RSO.
    e. On receipt of any radioactive material, the required information must be logged on the Radioactive Source Inventory Log.
4. Radioactive Source Disposal
    a. Radioactive sources will be disposed of by the RSO when they are broken, damaged, or otherwise declared unusable.
    b. At NMC, sources will be disposed of in either a solid waste container or a liquid waste container in the secure source storage room.
    c. A Radioactive Material Disposal Report shall be completed by the RSO and the source inventory log updated.
    d. Empty source containers, after verifying that they are uncontaminated, shall have all labels removed or defaced prior to disposal in unrestricted areas.
5. Record Retention
    a. Records shall be kept showing receipt, transfer, and disposal of radioactive materials:
        1. Records of receipt are to be maintained for three years following the transfer or disposal of the source.
        2. Records of transfer of byproduct material are to be kept for five years following the transfer.
    b. All records of any transfers are to be documented in the RSO.

RADIOACTIVE SOURCE INVENTORY LOG

ISOTOPE	TYPE	SERIAL #	ACTIVITY	CHEMICAL FORM	CERT. DATE	DISPOSITION TRANSFER OR DISPOSAL	DATE	SITE

RADIOACTIVE MATERIAL DISPOSAL REPORT

The disposal on all quantities of radioactive material shall be reported on this form.

Nuclide: _____ Quantity: _____

Serial #: _____

Form:

( ) Solid, Sealed Source

( ) Solid, Open Source

( ) Sealed Liquid Source

( ) Open Liquid Source

Discard Method:

( ) Solid Waste Canister

( ) Liquid Waste Canister

( ) Other, Specify: _____

Signature/Date: _____

RADIOACTIVE SOURCE INVENTORY LOG

SUMMARY PAGE

ISOTOPE	TOTAL ACTIVITY

Inventory Date: _____ Signature: _____

RP-102, Rev 1

Nuclear Measurements Corporation

Radiation Safety Program

RADIATION PROTECTION SURVEY PROGRAM

Written by: Donald L. DeMoss

Nuclear Measurements Corp.

2460 N. Arlington Ave. – P.O. Box 18248 Phone (317) 546-2415 Fax (317) 543-4420

Indianapolis, Indiana 46218 Email: demossd@aol.com

A. PURPOSE:

The purpose of this procedure is to establish the methods and frequencies for performing dose rate and smear contamination surveys at Nuclear Measurements Corporation (NMC).

B. References:

1. 10CFR20
2. NRC NUREG-1556,VOL 18, APPENDIX J

C. General:

1. A survey of the radioactive material storage area will be performed on a quarterly basis by the Radiation Safety Officer (RSO). Additional surveys will be performed if deemed necessary.
2. All portable survey and counting instruments used for performing contamination surveys will be in current calibration.
3. Each scale of the portable instrument should be source checked with a Cs^{137} source before each use to verify the instrument is responding to a radiation field.
4. All survey records should be kept in the health physics log maintained by the RSO.
5. The RSO is responsible for immediate investigation of abnormally high survey results as discussed in Step D.2. of this procedure.

D. Procedure:

1. Each survey area will be checked for dose rates and smear contamination. All survey results are to be documented on the Radiation Survey Results form at the end of this procedure.
    a. Dose rates are to be determined using a survey instrument. All dose rates should be written on the survey map in units if mR/hr. Any special comments should be written directly on the map.
    b. Smear sample contamination will be determined by obtaining a representative number of smears of the area being surveyed. The smears will be counted for both alpha and beta activity on a NMC windowless gas flow proportional counter.
        1) The smears should be numbered sequentially (write the number on the back of the smear and on the survey may; circle the smear number on the map). Record the results of the smear analyses in the table provided on the Radiation Survey Results form.

2) Prior to counting the smears, obtain a five minute background count in both the alpha and beta channel s. Record the background cpm values on the Radiation Survey Results form.
3) The RSO will take necessary corrective action to reduce the survey measurements to a level below the valves stated above in step D.2. The RSO will perform a follow up survey and document the findings on the Radiation Survey Results form at the end of this procedure.

   The RSO shall write a brief summary of the corrective actions taken to bring the survey into compliance.

RADIATION SURVEY RESULTS

MAP OF AREA:

Instrument I.D.: _____ Serial #: _____

Calibration Due Date: _____

Proportional Counter I.D.: _____

Alpha Background: _____

Beta Background: _____

SMEAR #	NET ALPHA CPM	NET BETA CPM

Signature: _____ Date: _____

(Use more than one copy if required)

NMC
Nuclear Instrumentation

Nuclear Measurements Corporation

Radiation Safety Program

RADIOACTIVE MATERIAL RECEIPTS

Written by: Donald L. DeMoss

Nuclear Measurements Corp.

2460 N. Arlington Ave. – P.O. Box 18248 Phone (317) 546-2415 Fax (317) 543-4420

Indianapolis, Indiana 46218 Email: demossd@aol.com

A. PURPOSE:

The purpose of this procedure is to describe the requirements for the receipt and opening of radioactive material.

B. References:

1. NUREG-1556, Vol 18, Appendix K
2. 10 CFR 20, Appendix D
3. NMC PR-104, Rev 0

C. General:

1. All radioactive material must be received by the RSO or his designated qualified assistant. The material after receipt is to be secured in the source storage room.

D. Procedure:

1. The RSO or the authorized individual will verify the package has not been damaged during shipment.
2. Gloves will be worn at all times during the receiving process and until the source(s) are secured
3. Check DOT White I, Yellow II, or Yellow III label for total activity of each source and confirm that it does not exceed license possession limits.
4. Verify external doses do not exceed allowable limits with a GM Survey Countrate Meter and, if warranted perform a smear (dry wipe) on the package and use a windowless proportional counter the read the smear sample.
5. Verify that all documentation is correct from the source(s) supplier.
6. Maintain results of the source records including receipt, survey inspection and wipe test.
7. Verify that all incoming packaging material is disposed of properly including the obliterating of any radiation labels.
8. If any package exceeds the limits allowed by 10 CFR 20, Appendix D notify the appropriate NRC Regional Office.
9. No licensed material will be shipped without the RSO's approval and oversight to ensure conformance with all agencies regulations and guidelines.

RADIOACTIVE MATERIAL RECEIPT SURVEY FORM

Date/Time Received:_____

Date and Time Surveyed:_____

Package description:
Isotope(s):_____ Manufacturer:_____
Activity:_____ Serial #(s):_____

General Condition of Package:
_____
_____

Survey results:
Instrument Used:_____ Serial #:_____

mrem/h at Contact:_____

Instrument Used for Smear Surveying:_____ Serial #:_____
Smears #1 :_____
Smears #2 :_____
Smears #3 :_____
Smears #4 :_____
Smears #5 :_____
Smears #6 :_____

Signature:_____ Date: _____

RP-105, Rev. 1

Nuclear Measurements Corporation

Radiation Safety Program

LEAK TEST PROCEDURE

Written by: Donald L. DeMoss

Nuclear Measurements Corp.

2460 N. Arlington Ave. – P.O. Box 18248 Phone (317) 546-2415 Fax (317) 543-4420

Indianapolis, Indiana 46218 Email: demossd@aol.com

A. PURPOSE:

The purpose of this procedure is to describe the requirements for performing a leak test on radioactive sources.

B. References:

1. NUREG-1556, Vol 18, Appendix O
2. 10 CFR 20, Appendix D
3. NMC RP-107, Rev 1

C. General:

1. Rubber gloves will be worn when performing leak testing in this procedure.
2. Use a survey instrument for monitoring the area where the leak testing is being performed.
3. Instrumentation used to count leak test smears must have a detection sensitivity of at least 0.005 microcuries (µCi).
4. Notify the RSO if a leak test reveals greater than 0.005 µCi of removable contamination.

D. Procedure:

1. Each sealed source containing greater than 100 µci of beta and/or gamma emitting material or 10 µCi of alpha emitting material shall be leak types of sources:
   a. Tritium
   b. Sources in gas form
   c. Sources with a half-life of less than thirty (30) days
2. Obtain a smear (dry swipe)of the source using a clean piece of filter paper. The size of the filter paper shall be approximately 47mm.
3. Depending on the source being tested either a proportional counter or a NaI detector counter will be used.
4. The counter efficiency will be determined by counting an appropriate source, depending on the source being leak tested, of known activity for ten (10) minutes. The source shall be a NIST traceable source. Record the net cpm on the attached data sheet and determine the counter efficiency.
5. Count the smear sample with the appropriate counter and record the results on the attached data sheet.
6. Complete the attached data sheet.

7. If the leak test reveals greater than .005 µci of removable contamination then follow the steps below:
   a. Immediately remove the source from service.
   b. Decontaminate and repair or dispose of the source in accordance with applicable Federal Guidelines and Regulations.
   c. Submit a report within 3 days to the NRC Region III describing the equipment involved, the test results and the corrective action taken.

LEAK TEST DATA SHEET

Leak Tested Source Information:

Nuclide:_____ Serial #:_____
Activity:_____

Detector Information:
Model:_____ Serial #:_____

Detector Efficiency Calculations:
Nuclide:_____ Serial #:_____

Activity:_____ dpm
(Note: $\text{dpm} = \mu\text{Ci} \times 2.22 \times 10^6\ \text{dpm}/\mu\text{Ci}$)

Background:_____ cpm Source:_____ cpm

Net Source:_____ *cpm*

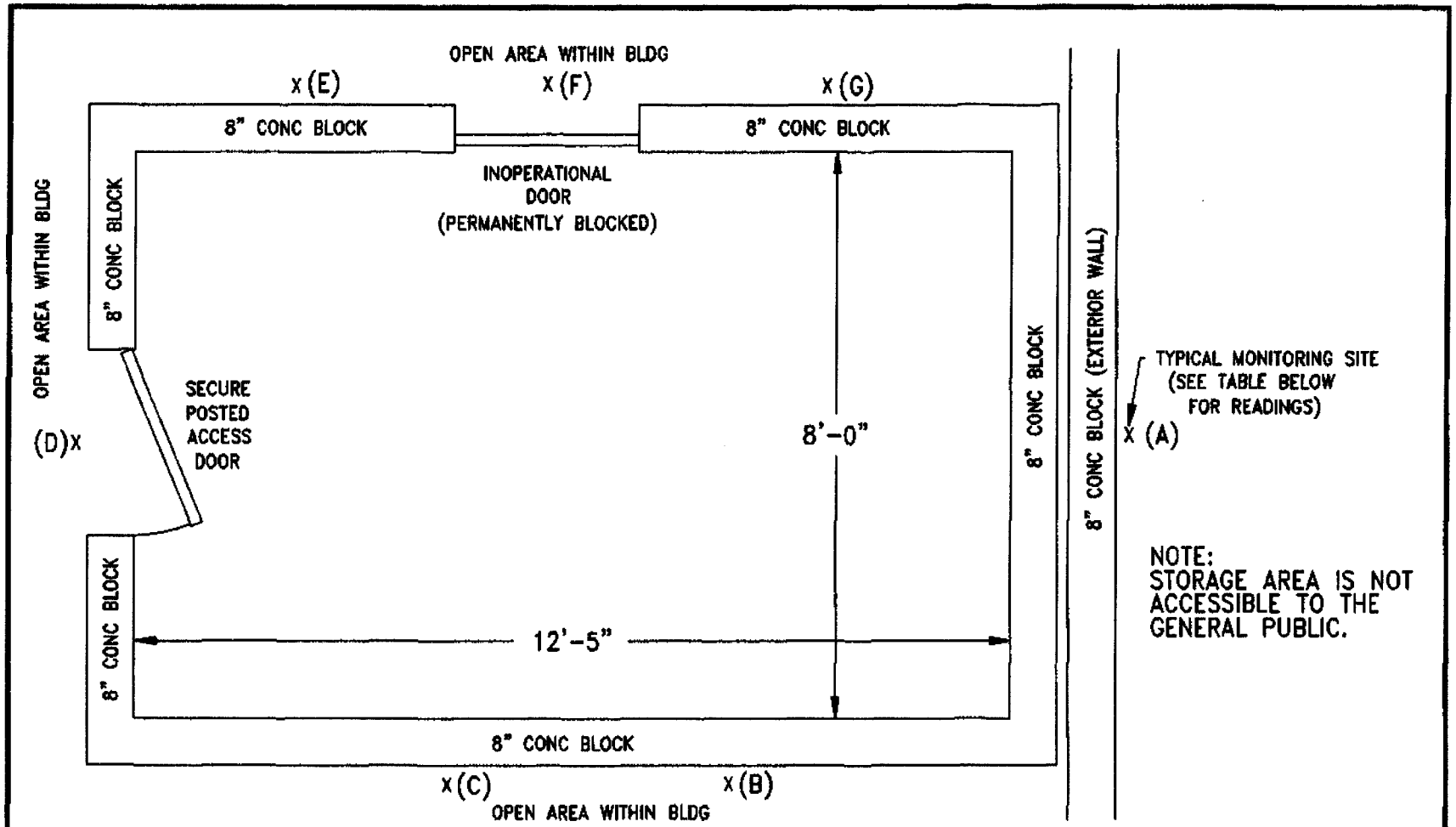
Detector Efficiency= $\frac{\text{Net Source cpm}}{\text{Source dpm}} = \_\_\_\_\_ \frac{\text{cpm}}{\text{dpm}}$

Leak Test Results:

Leak Test Smear Net cpm = _____

$\frac{\text{Net Smear cpm} \div \text{Detector Efficiency}}{2.22\text{x}10^6\ \text{dpm}/\mu\text{Ci}}$ = _____ µCi of Removable Contamination

Performed by: _____ Date: _____



NOTE:
STORAGE AREA IS NOT ACCESSIBLE TO THE GENERAL PUBLIC.

DATE	A	B	C	D	E	F	G

DRAWN M.Proctor	DATE 10/16/12	Nuclear Measurements Corp. 2460 NORTH ARLINGTON AVE. INDIANAPOLIS, INDIANA 46218-0248
CHECKED		NAME RAD. SOURCE STORAGE AREA
APPROVED		
REVIEWED		QA / SIZE A / NUMBER N/A / REV. Ø
OTHER		SCALE 1/2"=1' / WEIGHT / SHEET 1 of 1

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed sheet containing the label at the line so that the entire shipping label is visible. Place the label on a single side of the package and cover it completely with clear plastic shipping tape. Do not cover any seams or closures on the package with the label.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   UPS locations include the UPS Store®, UPS drop boxes, UPS customer centers, authorized retail outlets and UPS drivers.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.
   Take your package to any location of The UPS Store®, UPS Drop Box, UPS Customer Center, UPS Alliances (Office Depot® or Staples®) or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

FOLD HERE